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TITLE: METHOD AND APPARATUS FOR MANUFACTURING ORGANIC EL
DISPLAY AND COLOR FILTER BY INK JET METHOD

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) Group Art Unit:
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REPLACEMENT CLAIMS

1. A method for manufacturing an organic EL display by an ink jet method, wherein an uniform organic EL layer is formed by sequentially continuously carrying out processes of: discharge-placing at least an organic EL material in a form of solution on a substrate; and drying the organic EL material in a form of ink placed on the substrate by heating.

2. The method for manufacturing an organic EL display according to Claim 1 wherein the organic EL material in the form of ink placed on the substrate is dried by heating over thereof.

3. The method for manufacturing an organic EL display according to Claim 1 wherein the placing of the organic EL material on the substrate and drying by heating are sequentially continuously carried out by relatively moving the substrate to a nozzle which discharges the organic EL material and to a heating device which heats the organic EL material over thereof.

4. The method for manufacturing an organic EL display according to Claim 1 wherein the temperature of the substrate is controlled so as the temperature of the substrate dose not rise.

5. The method for manufacturing an organic EL display according to Claim 1 wherein the device for drying the solution material on the substrate by heating over thereof is an infrared heater.

6. The method for manufacturing an organic EL display according to Claim 1 wherein a device for the substrate temperature control is a chiller, a Peltier element, or a combination thereof.

7. An apparatus for manufacturing an organic EL display comprising a device for drying a solution material on a substrate by heating over thereof on an axis of relative moving direction of a nozzle and the substrate, wherein after a process of discharging an organic EL material from the nozzle thereby placing at a predetermined position on the substrate, a process of drying the organic EL material by heating is carried out at the backward of the nozzle while relatively moving the nozzle and the substrate.

8. The apparatus for manufacturing an organic EL display according to Claim 7 comprising the device for drying the solution material on the substrate by heating over thereof, on the both side of the nozzle, on an axis of relative moving direction of the nozzle and the substrate wherein after a process of discharging an organic EL material from the nozzle thereby placing at plural pixel openings placed in the form of two-dimensional matrix on the substrate by relative parallel reciprocation of the nozzle and the substrate, a process of drying the organic EL material by heating is always carried out by the heating device at the backward of the nozzle accompanied with a change of relatively moving direction of the nozzle and the substrate.

9. The apparatus for manufacturing an organic EL display according to Claim 7 comprising a temperature controlling mechanism on a stage supporting the substrate so as the temperature of the substrate is not raised.

10. The apparatus for manufacturing an organic EL display according to Claim 7 wherein the device for drying the solution material on the substrate by heating over thereof is an infrared heater.

11. The apparatus for manufacturing an organic EL display according to Claim 9 wherein a device for the substrate temperature control is a chiller, a Peltier element or a combination thereof provided on the stage.

12. A method for manufacturing a color filter by an ink jet method wherein an uniform coloring layer is formed by sequentially continuously carrying out

processes of: discharge-placing a dye material in a form of solution on a substrate; and drying the dye material in a form of ink placed on the substrate by heating.

13. The method for manufacturing a color filter according to Claim 12 wherein the dye material in the form of ink placed on the substrate is dried by heating over thereof.

14. The method for manufacturing a color filter according to Claim 12 wherein the placing of the dye material on the substrate and drying by heating are sequentially continuously carried out by relatively moving the substrate to a nozzle which discharges the dye material and to a heating device which heats the dye material over thereof.

15. The method for manufacturing a color filter according to Claim 12 wherein the temperature of the substrate is controlled so as the temperature of the substrate dose not rise.

16. The method for manufacturing a color filter according to Claim 12 wherein the device for drying the solution material on the substrate by heating over thereof is an infrared heater.

17. The method for manufacturing a color filter according to Claim 12 wherein a device for the substrate temperature control is a chiller, a Peltier element or a combination thereof.

18. An apparatus for manufacturing a color filter comprising a device for drying a solution material on a substrate by heating over thereof on an axis of relative moving direction of a nozzle and the substrate, wherein after a process of discharging a dye material from the nozzle thereby placing at a predetermined position on the substrate, a process of drying the dye material by heating is carried out at the backward of the nozzle while relatively moving the nozzle and the substrate.

19. The apparatus for manufacturing a color filter according to Claim 18 comprising the device for drying the solution material on the substrate by heating over thereof, on the both side of the nozzle, on an axis of relative moving direction of the nozzle and the substrate, wherein after a process of discharging

a dye material from the nozzle thereby placing at plural pixel openings placed in the form of two-dimensional matrix on the substrate by relative parallel reciprocation of the nozzle and the substrate, a process of drying the dye material by heating is always carried out by the heating device at the backward of the nozzle accompanied with a change of relatively moving direction of the nozzle and the substrate.

20. The apparatus for manufacturing a color filter according to Claim 18 comprising a temperature controlling mechanism on a stage supporting the substrate so as the temperature of the substrate is not raised.

21. The apparatus for manufacturing a color filter according to Claim 18 wherein the device for drying the solution material on the substrate by heating over thereof is an infrared heater.

22. The apparatus for manufacturing a color filter according to Claim 20 wherein a device for the substrate temperature control is a chiller, a Peltier element or a combination thereof provided on the stage.

23. An electronic device using an organic EL display, as a display, manufactured by the manufacturing method according to Claim 1.

24. An electronic device using an organic EL display, as a display, manufactured by the manufacturing method according to Claim 7.

25. An electronic device using an organic EL display or liquid crystal display, as a display, using a color filter manufactured by the manufacturing apparatus according to Claim 12.

26. An electronic device using an organic EL display or liquid crystal display, as a display, using a color filter manufactured by the manufacturing apparatus according to Claim 18.